

HALACARIDAE FROM THE GREAT BARRIER REEF AND CORAL SEA: THE
GENERA *LOHMANNELLA*, *SCAPTOGNATHIDES* AND *SCAPTOGNATHUS*
(ACARINA: HALACARIDAE: LOHMANNELLINEAE)

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Otto, J.C. 2000 06 30: Halacaridae from the Great Barrier Reef and Coral Sea: the genera *Lohmannella*, *Scaptognathides* and *Scaptognathus* (Acarina: Halacaridae: Lohmannellinae). *Memoirs of the Queensland Museum* 45(2): 535-555. Brisbane. ISSN 0079-8835.

Nine new species of the lohmannelline genera *Scaptognathus* and *Scaptognathides* were found among sand and coral rubble, collected intertidally or from shallow water in the Great Barrier Reef Marine Park and on reefs of the Coral Sea: *Scaptognathides heraldensis* sp. nov., *S. tomkinsae* sp. nov., *S. undulatus* sp. nov., *Scaptognathus gracilipalpus* sp. nov., *S. exquisitus* sp. nov., *S. insularis* sp. nov., *S. kolymbus* sp. nov., *S. monstrosus* sp. nov., and *S. oceanus* sp. nov. *Lohmannella dictyota* Bartsch, *Scaptognathus ornatus* Bartsch and *Scaptognathus kunzi* Bartsch are newly recorded from Australia and a key to Australian species of *Lohmannella*, *Scaptognathides* and *Scaptognathus* is presented. □ *Halacaridae, Lohmannellinae, Lohmannella, Scaptognathides, Scaptognathus, Great Barrier Reef, Coral Sea.*

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This paper is one of a series of publications reporting on halacarid mites found during a survey of the Great Barrier Reef, adjacent coast and reefs of the Coral Sea. The subject of previous publications in this series were the genera *Aganopsis* and *Halacaropsis* (Otto, 1999a), *Australacarus* (Otto, 2000a), *Rhombognathus* and *Isobactrus* (Bartsch, 2000), *Simognathus* and *Acaromantis* (Otto, 2000b), *Agane* (Otto, 1999b), *Tropitalacarus* (Otto & Bartsch, 2000) and *Corallihalacarus* (Otto, 1999c), while the present paper deals with the lohmannelline genera *Lohmannella*, *Scaptognathides* and *Scaptognathus*.

Bartsch (1993a) was the first to record Lohmannellinae from Australia, describing *Lohmannella arenaria*, *Scaptognathides australis*, *Scaptognathus australis*, and *S. peregrinus* from Rottnest Island, Western Australia. Abé & Green (1994) added *Scaptognathus bassianus* from Tasmania, and Otto (1994) described *Lohmannella pinggi* from southeastern Australia. Two further species from Rottnest I., one of *Scaptognathus* and one of *Lohmannella*, have been reported by Bartsch (1993a) but are as yet undescribed. Thus, no Lohmannellinae have previously been reported from the northern half of Australia.

METHODS

Sand and coral rubble were collected by hand. Mites were extracted by washing the substrates in

a bowl of water and decanting the supernatant through a 100µm sieve. All material was collected by the author except where stated otherwise. Mites were cleared in lactic acid and mounted in PVA or glycerine jelly. Drawings were made with the aid of a camera lucida.

In the accounts of each species only one sex is described in detail, while for the opposite sex only characters that differ are stated. Measurements are in micrometres (µm). Terminology follows Bartsch's (1993b) glossary. 'Areola' is an area on a plate or a leg segment where the cuticular structure differs from that on the remainder of the plate or segment. In the accounts of leg chaetotaxy, numbers of setae present on both sides of a specimen but variable within a species are separated by a slash. Abbreviations: AD, anterior dorsal plate; AE, anterior epimeral plate; OC, ocular plate; GA, genitoanal plate; GO, genital opening; PD, posterior dorsal plate; PE, posterior epimeral plate; P-2, second palp segment counted from base of palp; I-IV, leg I to leg IV; pas, parambulacral seta(c); pgs, perigenital seta(e); sgs, subgenital seta(e). Further abbreviations used in the illustrations are explained in the captions. Great Barrier Reef Marine Park is abbreviated 'GBR'.

All material with the registration number prefix QMS is deposited in the Queensland Museum's branch, Museum of Tropical Queensland in Townsville. Abbreviations for other depositories are: ANIC, Australian National Insect Collection,

Canberra; SMF, Zoologisches Institut und Naturmuseum Senckenberg, Frankfurt; ZMH, Zoologisches Institut und Zoologisches Museum, Universität Hamburg.

SYSTEMATICS

Lohmannella Trouessart, 1901

Leptognathus Hodge, 1863: 302. Trouessart, 1894: 175. Lohmann, 1893: 87; 1907: 354. Fountain, 1953: 363. Nec Swainson, 1839 (Pisces).
Trouessartella Lohmann, 1901. Nec Cossmann, 1899 (Mammalia).
Lohmannella Trouessart, 1901: 250. Viets, 1927: 148; 1940: 91; 1956: 691. André, 1946: 125. Newell, 1947: 23; 1967: 92; 1971: 34; 1984: 248. Imamura, 1968: 472. Bartsch, 1977b: 141; 1983: 194; 1986: 231; 1992: 457; 1993a: 91; 1993b: 145. Otto, 1994: 32.

TYPE SPECIES. *Leptognathus falcatus* Hodge, 1863, by monotypy.

DIAGNOSIS. Idiosoma wide, flattened. Dorsal plates AD, OC and PD well developed, with four pairs of gland pores, one on AD, one on OC and two on PD. AE usually with four, rarely three, pairs of setae. Both pairs of maxillary setae on rostrum. Palps inserted dorsally on gnathosomal base, separated from each other by an interval less than the width of their most proximal segment, usually longer than gnathosomal base, four-segmented; P-2 much longer than other segments, with two setae; P-3 with cuticular spine; P-4 with one slender basal seta and one spiniform seta. Tibia I with 4-8 bipectinate setae. Tarsus I in addition to parambulacral setae with at least two other ventral setae.

Lohmannella dictyota Bartsch, 1992

Lohmannella dictyota Bartsch, 1992: 458.

MATERIAL. QMS105379-105382, 4♀, GBR, Elizabeth Reef, 19°20.12'S 149°02.85'E, 25 Dec. 1997, coarse sand & rubble at 3m; QMS105383-105385, 3♀, GBR, Myrmidon Reef, 18°16.69'S 147°23.21'E, 14 Apr. 1998, coarse sand & rubble at 12-17m; QMS105386-105388, 3♀, GBR, Loadstone Reef, 18°42.03'S 147°06.54'E, 12 Apr. 1998, coarse sand & rubble at 12-15m; A63/99 (ZMH), ♀, GBR, Loadstone Reef, 18°41.91'S 147°06.49'E, 12 Apr. 1998, sand & rubble at 2m; ANIC ♀, GBR, Club 21 Reef, 19°22.36'S 149°01.05'E, 26 Dec. 1997, coarse sand & rubble at 15m; QMS105389, ♀, GBR, Great Palm I., Cannon Bay, 18°40.98'S 146°35.19'E, 8 Apr. 1998, sand & gravel at 3m; QMS105390, ♀, GBR, Boulder Reef, ca. 15°24'S 145°27'E, 8 Oct. 1998, A. Thompson, coarse sand at 2m; QMS105391, ♀, GBR, No Name Reef, ca. 14°39'S 145°40'E, 9 Oct. 1998, medium coarse sand at 6m; QMS105392, ♀, Coral Sea (Queensland Plateau), Lihou Reef, ca. 17°25'S 151°04'E, 20 July 1998, D. Ferner, sand at 5m.

REMARKS. I have compared the above material from Australia with the holotype from Bora Bora (SMF) and did not find significant differences. The specimens listed above are the first records of this species from Australia. The species was previously known only from its type locality. Other species of *Lohmannella* known from Australia are *L. arenaria* Bartsch, 1993a, and *L. pinggi* Otto, 1994. All Australian *Lohmannella* species can be distinguished from each other by the number of protuberances on the palp (two in *L. arenaria*, one in *L. dictyota* and none in *L. pinggi*).

Scaptognathides Monniot, 1972

Scaptognathides Monniot, 1972: 361. Bartsch, 1977a: 85; 1983: 196; 1988: 221; 1993a: 93; 1996: 146. Bartsch & Schmidt, 1978: 18.

DIAGNOSIS. Dorsal plates AD, OC, and PD well developed. GA of female and male undivided. Rostrum slender, apically not widened. One pair of maxillary setae on rostrum, the other on gnathosomal base. Palps two-segmented; apical segment with one seta basally, and three fine setae and four spines distally. Leg I larger than succeeding legs. Telofemur I ca. twice as long as tibia I; paired claws of tarsus I with an umbrella-like arrangement of pecten. Tibia I with no more than two thickened or bipectinate setae. Tibiae II-IV and genu I without thickened or bipectinate setae.

Scaptognathides heraldensis sp. nov. (Fig. 1)

ETYMOLOGY. Referring to the species' type locality.

MATERIAL. HOLOTYPE: QMS105393, ♀, Coral Sea (Queensland Plateau), Herald Cays, 16°57.171'S 149°12.036'E, 16 Sep. 1998. G.A. Diaz-Pulido, coarse sand at 5-15m. PARATYPES: QMS105394, ♂, A55/99 (ZMH), ♀, ANIC ♂, data as for holotype.

DESCRIPTION. *Female*. Idiosoma 188-190 long (holotype 188). All dorsal setae inserted on plates, none in membranous integument (Fig. 1A). All plates ornamented with numerous minute depressions. AD with three pairs of setae as illustrated. OC ca. twice as long as wide; single gland pore in anterolateral corner. PD with two pairs of setae on anterior 1/2 of plate; two pairs of gland pores, the anterior level with posterior pair of setae, the other at posterior margin of plate and associated with cuticular projections; directly posterior to anterior pair of gland pore lateral margin of plate distinctly convex (Fig. 1A). AE finely punctate (Fig. 1B). GA much longer than

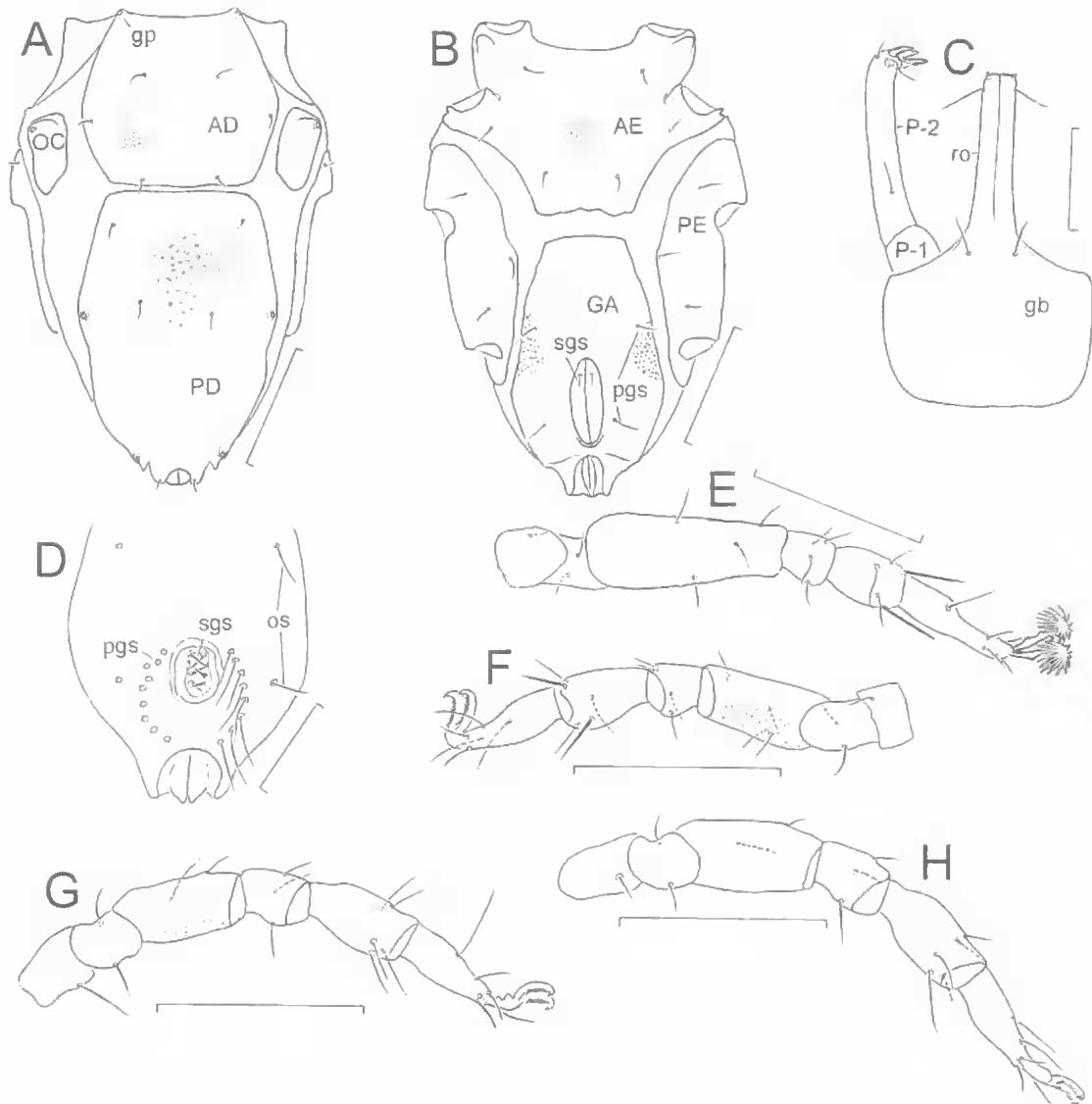


FIG. 1 *Scaptognathides heraldensis* sp. nov. adult. A, idiosoma, dorsum (AD = anterior dorsal plate; gp = gland pore; OC = ocular plate; PD = posterior dorsal plate); B, ♀ idiosoma, venter (AE = anterior epimeral plate; GA = genitoanal plate; PE = posterior epimeral plate; pgs = perigenital seta; sgs = subgenital seta); C, gnathosoma, venter (gb = gnathosomal base; P-1, P-2 = palp segments; ro = rostrum); D, genitoanal plate of ♂ (os = outlying setae); E, leg I, dorsal view; F, leg II, ventromedial view; G, leg III, ventromedial view; H, leg IV, ventromedial view. Scales: A, B, E, F, G, H = 50µm; C = 25µm.

wide; anterior margin truncate; laterally slightly papillate, remainder of plate nearly smooth, lacking punctations; two pairs of pgs as illustrated (Fig. 1B). GO with one pair of sgs.

Gnathosoma (Fig. 1C) 0.43-0.45 times the length of idiosoma.

Telofemora of legs ventrally papillate (Fig. 1F,G). Chaetotaxy (trochanter - tibia): I

1-2-4-4-5 (Fig. 1E), II 1-2-4-4-5 (Fig. 1F), III 1-2-2-3-5 (Fig. 1G), IV 1-2-2-3-5 (Fig. 1H). Tarsus III with three dorsal setae, lacking conspicuously thickened and blunt seta.

Male. Idiosoma 182-198 long. GA with ca. 17 pgs flanking GO laterally and posterolaterally (Fig. 1D); two pairs of outlying setae, one pair anteriorly, the other pair at level of GO.

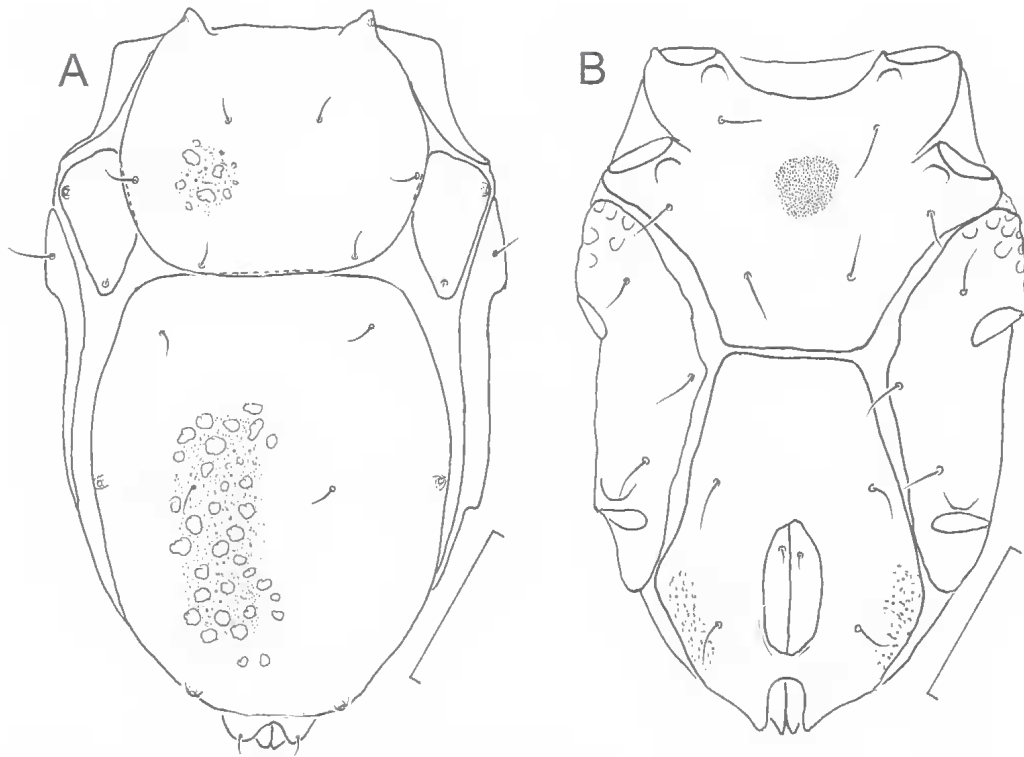


FIG. 2. *Scaptognathides tomkinsae* sp. nov., adult. A, idiosoma, dorsum; B, idiosoma of ♀, venter. Scale: A, B = 50µm.

REMARKS. The only other species of *Scaptognathides* with one gland pore on the OC are *S. hawaiiensis* Bartsch, 1988, *S. australis* Bartsch, 1993a, and *S. tomkinsae* sp. nov. All other congeners have two gland pores on the OC. *Scaptognathus heraldensis* differs from *S. australis* most markedly by the OC being about twice as long as wide instead of four times as long as wide, and from *S. hawaiiensis* by having two pairs instead of one pair of gland pores on the PD. For differences between *S. heraldensis* and *S. tomkinsae* see below.

***Scaptognathides tomkinsae* sp. nov.**
(Fig. 2)

ETYMOLOGY. For Paula Tomkins who collected the sample from which the specimens were extracted.

MATERIAL, HOLOTYPE: QMS105395, ♀, GBR, Sand Bank No. 1, 14°18'S 145°12'E, 21 Oct. 1998, P. Tomkins, coarse sand at 3-4m. PARATYPES: QMS105396, ♂, A56/99 (ZMH), ♀, data as for holotype.

DESCRIPTION. *Female*. Idiosoma 206-222 long (holotype 206). Dorsal plates foveate and finely punctate, less conspicuously on OC. All

dorsal setae inserted on plates (Fig. 2A). AD with three pairs of setae inserted as illustrated. OC ca. twice as long as wide; single gland pore in anterolateral corner; posteriorly with a minute seta. PD with two pairs of setae in anterior 1/2; two pairs of gland pores, the anterior level with posterior pair of setae, the other at posterior margin of plate; lateral margin posterior to anterior pair of gland pore almost straight, not distinctly convex. Adanal setae inserted dorsally on anal cone. AE and GA finely punctate; anterior margin of GA truncate (Fig. 2B); two pairs pgs; one pair sgs. PE anterolaterally with few foveae.

Gnathosoma 0.45 times the length of idiosoma; outline and setation as illustrated for *S. heraldensis* (Fig. 1C).

Outline of leg segments and chaetotaxy as illustrated for *S. heraldensis*. Chaetotaxy (trochanter - tibia): I 1-2-4-4-5, II 1-2-4-4-5, III 1-2-2-3-5, IV 1-2-2-3-5. Tarsus III with three dorsal setae, lacking conspicuously thickened and blunt seta. Telofemur IV without thickened seta.

Male. Idiosoma 206 long. GA with 17 pgs flanking GO laterally and posterolaterally; two pairs of outlying setae, one pair anteriorly, the other pair at level of GO (as for *S. heraldensis* in Fig. 1D).

REMARKS. Foveate dorsal plates are also known for *S. australis* Bartsch, 1993a, and *S. bicornis* Bartsch, 1977a (see Bartsch, 1996). *Scaptognathides tomkinsae* may be distinguished from *S. bicornis* by having all dorsal setae inserted on the plates instead of three pairs in the membranous cuticle, and from *S. australis* by the OC being about twice as long as wide instead of four times longer than wide.

Scaptognathides undulatus sp. nov.
(Fig. 3)

ETYMOLOGY. Latin, *undulatus* = wavy; referring to the undulated ventral ridge of the telofemora.

MATERIAL. HOLOTYPE: QMS105397, ♀, Coral Sea (Queensland Plateau), Herald Cays, 16°57.171'S 149°12.036'E, 16 Sep. 1998, G.A. Diaz-Pulido, coarse sand at 5-15m.

DESCRIPTION. *Female*. Idiosoma 182 long. All dorsal setae inserted on dorsal plates, which are ornamented with shallow pits within polygons (Fig. 3A). AD with three pairs of setae as illustrated (Fig. 3A). OC ca. twice as long as wide; two gland pores, one anteriorly, the other posteriorly. PD with two pairs of setae on anterior 1/2 (only insertion sockets visible in the only available specimen, setae most likely broken off); two pairs of gland pores. AE and GA ornamented by scattered pits (Fig. 3B); two pairs of pgs and one pair sgs.

Outline and setation of gnathosoma as illustrated for *S. heraldensis*; 0.45 times the length of idiosoma.

Telofemora ventrally with undulated sharp ridge (Fig. 3C-F). Chaetotaxy (trochanter - tibia): I 1-2-4-4-5 (Fig. 3C), II 1-2-5-4-5 (Fig. 3D), III 1-2-2-3-5 (Fig. 3E), IV 1-2-2-3-5 (Fig. 3F). Telofemur I, tarsus III and telofemur IV with a thickened blunt seta. Tarsus III with four dorsal setae.

Male. Unknown.

REMARKS. Other species of *Scaptognathides* with a polygonal pattern on the dorsal plates are *S. ornatus* Bartsch, 1984, *S. planus* Monniot, 1972, and *S. reticulatus* Bartsch, 1996. *Scaptognathides undulatus* differs from them by the presence of an undulated ventral ridge on the telofemora. In addition it may be distinguished

from *S. reticulatus* by the OC being shorter than three times its width, from *S. ornatus* by having a thickened seta proximally on tarsus III and from *S. planus* by having a pair of setae inserted on the AD close to its posterior margin.

Scaptognathus Trouessart, 1889

Scaptognathus Trouessart, 1889: 248; 1894: 176. Monniot, 1964: 491. Newell, 1971: 35. Bartsch, 1983: 196; 1993a: 95. Abé, 1988: 47. 1990a: 349, 1990b: 251, 1991: 436. Abé and Green, 1994: 169.

TYPE SPECIES: *Scaptognathus tridens* Trouessart, 1889, by monotypy.

DIAGNOSIS. Dorsal plates AD and PD well but OC poorly developed. GA of female usually bipartite or tripartite (only in *S. monstrosus* sp. nov. undivided). All maxillary setae on rostrum, none on gnathosomal base; paired claws smooth or with a minute process, never with umbrella-like arrangement of pecten; rostrum either slender posteriorly and conspicuously broadened anteriorly or broad throughout. Palp two-segmented. Palp segment P-2 with one seta proximally, another seta 1/2 way along segment or on distal 1/2, and several slender setae plus two, rarely three (latter only in *S. monstrosus*), large claws apically. Telofemur I shorter than twice the length of tibia I. Genu I with at least one bipectinate seta, tibia I with at least three and tibiae II-IV each with at least two such setae.

Scaptognathus exquisitus sp. nov.
(Fig. 4)

ETYMOLOGY. Latin, *exquisitus* = excellent, fine.

MATERIAL. HOLOTYPE: QMS105402, ♀, GBR, Yonge Reef, ca. 14°36'S 145°38'E, 10 Oct. 1998, A. Thompson, fine-medium coarse sand at 5m. PARATYPES: QMS105403-105405, 3♀, 2 ANIC ♀, A57/99 (ZMH), 2♀, GBR, Yonge Reef, ca. 14°36'S 145°38'E, 20 Sep. 1998, G. Diaz-Pulido, medium coarse sand at 7m; QMS105406-105407, 2♀, GBR, Elizabeth Reef, 19°20.12'S 149°02.85'E, 24 Dec. 1997, medium coarse sand at 10m; QMS105408, ♀, GBR, Elizabeth Reef, 19°20.12'S 149°02.85'E, 25 Dec. 1997, coarse sand at 3m; QMS105409, ♀, GBR, 18°16.46'S 147°22.88'E, Myrmidon Reef, 13 Apr. 1998, coarse sand & rubble at 7m; QMS105411-105413, 3♀, GBR, Carter Reef, ca. 14°32'S 145°35'E, 11 Oct. 1998, coarse sand at 0.5m; QMS105414, ♀, GBR, Lizard I., Coconut Beach, 13 Oct. 1998, medium coarse sand at 0.5m; QMS105415, ♀, GBR, Myrmidon Reef, Back, 17°46.03'S 146°26.38'E, 6 Mar. 1998, L. Levantier, medium coarse sand at 7m; QMS105416-105417, 2♀, A57/99 (ZMH), ♀, GBR, No Name Reef, reef-flat, ca. 14°39'S 145°40'E, 9 Oct. 1998, A. Thompson, coarse sand at ca. 5m; QMS105410, ♀, Coral Sea (Queensland Plateau), Diamond Islet, ca.

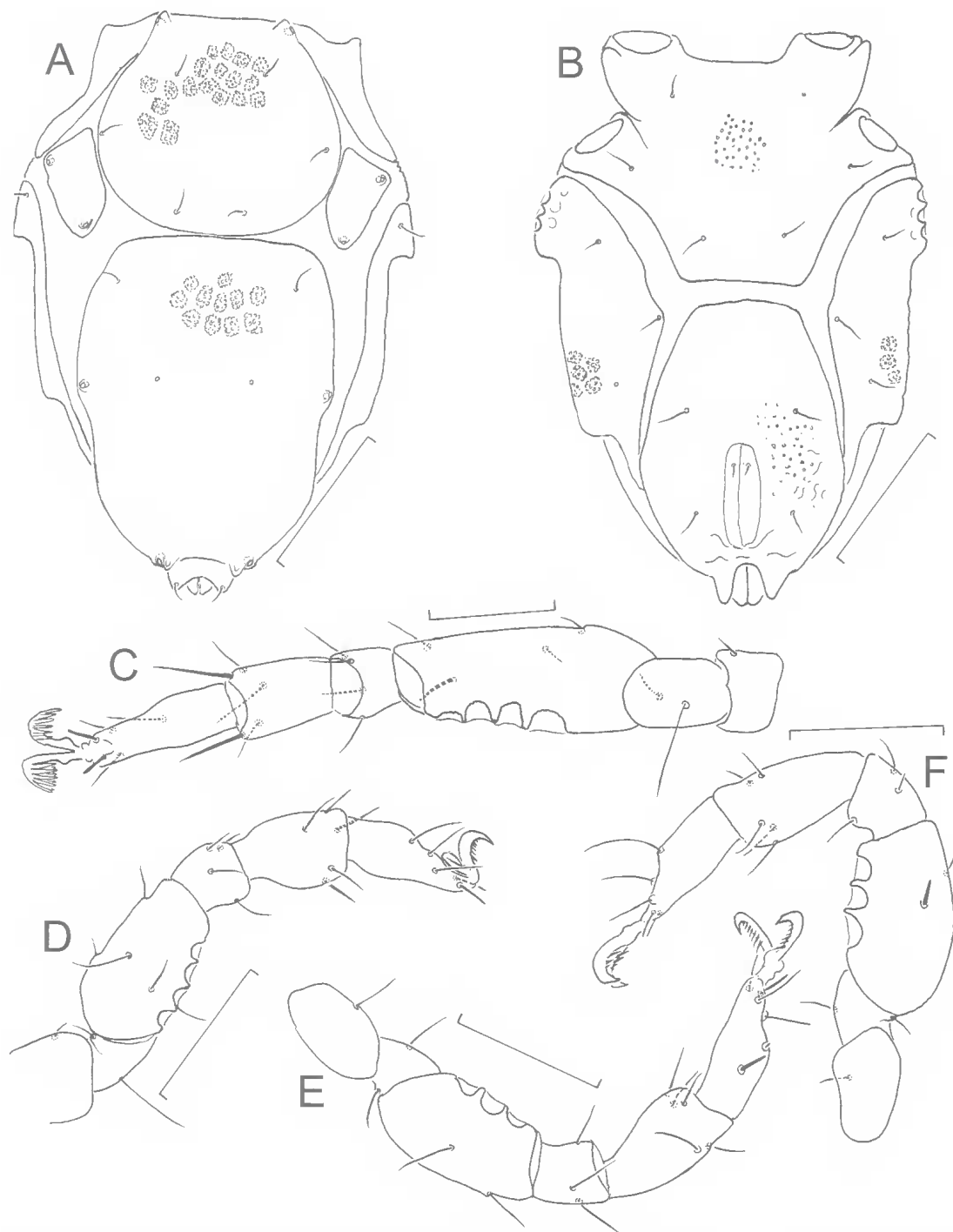


FIG. 3. *Scaptognathides undulatus* sp. nov, adult. A, idiosoma, dorsum; B, idiosoma of ♀, venter; C, leg I, ventromedial view; D, leg II, dorsolateral view; E, leg III, dorsolateral view; F, leg IV, medial view. Scales: A, B, D, E, F = 50µm; C = 25µm.

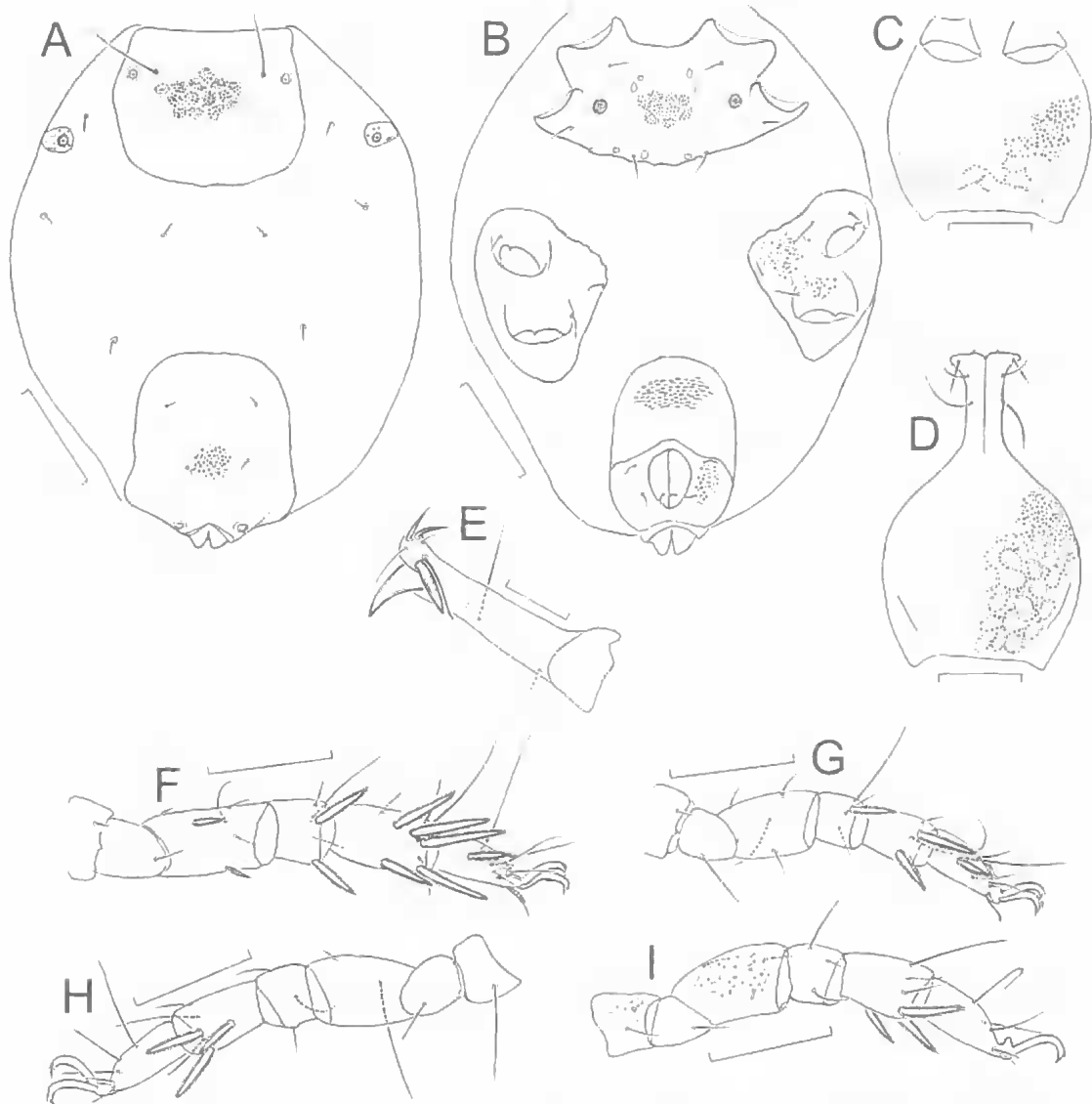


FIG. 4. *Scaptognathus exquisitus* sp. nov., adult. A, idiosoma, dorsum; B, ♀ idiosoma, venter; C, gnathosomal base, dorsal view; D, gnathosomal base and rostrum, ventral view; E, palp, ventral view; F, leg I, ventromedial view; G, leg II, ventromedial view; H, leg III, ventromedial view; I, leg IV, lateral view. Scales: A, B 100µm; C, D, F, G, H, I = 50µm; E, 25µm.

17°26'S 151°04'E, 20 July 1998, D. Fenner, subtidal sand; QMS105418-105426, 9♀, GBR, Sand Bank No.1, ca. 14°18'S 145°12'E, 21 Oct. 1998, P. Tomkins, coarse sand at 3-4m.

DESCRIPTION. *Female.* Idiosoma 232-307 long (holotype 273). Four pairs of setae in membranous cuticle (Fig. 4A). AD wider than long, with numerous shallow irregularly shaped pits arranged inconspicuously within polygons; numerous delicate canaliculi in deeper cuticular

layers; pair of setae which are much longer than other idiosomal setae inserted at level of gland pores in smooth area of plate. OC wider than long; with large central pore and few minute pits. PD furnished with numerous pits as on AD, but polygonal pattern less conspicuous than on AD or absent; two pairs of setae. AE (Fig. 4B) with ornamentation similar to that on AD; two pairs of large epimeral pores: several relatively wide but shallow panels near centre of plate and along

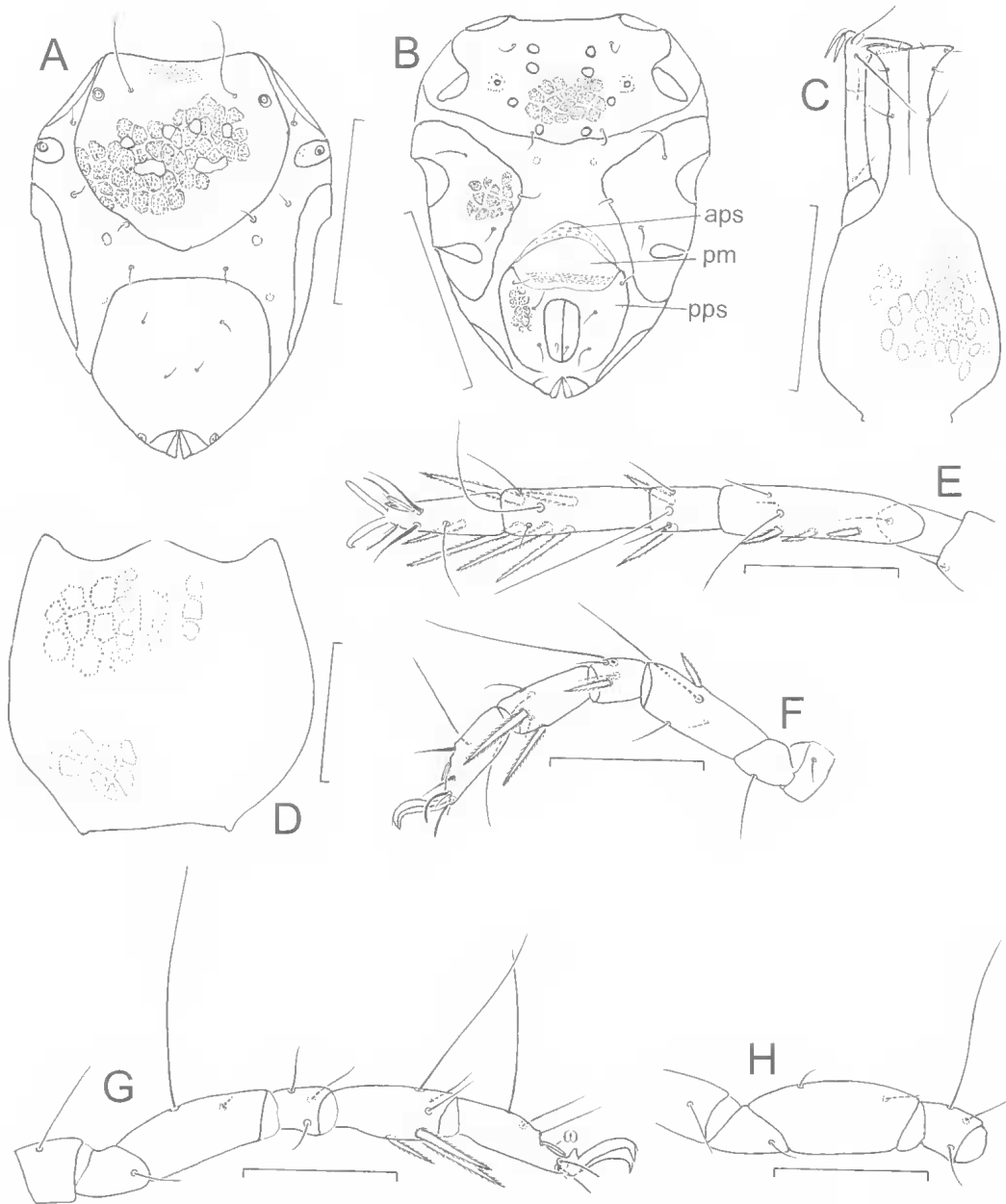


FIG. 5. *Scaptognathus gracilipalpus* sp. nov., ♀. A, idiosoma, dorsum; B, idiosoma, venter; C, gnathosoma, ventral view; D, gnathosomal base, dorsal view; E, right leg I, dorsal view; F, leg II, ventromedial view; G, leg III, ventrolateral view (ω = solenidion); H, trochanter to genu of leg IV, ventrolateral view. Scales: A, B, C = 100 μ m; D, E, F, G, H = 50 μ m.

posterior margin. GA bipartite; anterior margin of *pars sclerosum* distinctly convex; two pairs pgs; one pair sgs anteriorly.

Ventral and dorsal gnathosomal base with numerous minute pits (Fig. 4C,D), similar to those on idiosomal plates; in deeper cuticular

layers with larger scars (dotted in Fig. 4C,D), those in posterior 1/2 of ventral gnathosomal base surrounded by series of smaller surface pits (Fig. 4D). Rostrum with setae arranged as in Fig. 4D. Palp as in Fig. 4E.

Trochanters and telofemora of all legs with numerous pits laterally (illustrated for leg IV in Fig. 4I). Chaetotaxy (trochanter - tibia): I 1-1-6-5-9 (Fig. 4F), II 1-1-5-4-5 (Fig. 4G) (I-1-5-5-5 in single specimen), III 1-1-2-3-6 (Fig. 4H), IV 1-1-2-3-6 (Fig. 4I). Bipectinate setae (I-II-III-IV): telofemur 2-0-0-0; genu 2-1-0-0 (2-2-0-0 in single specimen), tibia 5-2-3-3, tarsus 1-1-0-0. Tarsus I with two ventral setae and pair of doubled pas, ventral member of medial doubled pas barely visible. Tarsus II with pair of doubled pas, one member in each duplet minute. Tarsi III and IV with pair of pas singlets.

Male. Unknown.

REMARKS. The only other species of *Scaptognathus* with 5-2-3-3 bipectinate setae on the tibiae (I-II-III-IV respectively) are *S. punctatus* Bartsch, 1981, *S. ornatus* Bartsch, 1984, and *S. gracilipalpus* sp. nov. *Scaptognathus exquisitus* differs from them by lacking bipectinate setae on telofemur II.

***Scaptognathus gracilipalpus* sp. nov.**
(Fig. 5)

ETYMOLOGY. Latin, *gracilis* = slender; referring to the species' slender palps.

MATERIAL. HOLOTYPE, QMS105436, ♀, GBR, Bylund Cay, ca. 21°47'S 152°24'E, 17 Apr. 1999, coarse sand just above low tide mark, sediment depth 10-20cm. PARATYPES: QMS105437, ♀, A58/99 (ZMH), 2♀, ANIC ♀, data as for holotype.

DESCRIPTION. *Female.* Idiosoma 212-220 long. Four pairs of setae in membranous cuticle (Fig. 5A); Dorsal and ventral plates ornamented with pitted polygons, best developed on AD, PD and AE, less conspicuous on PE and GA; reticulation disappearing towards anterior margin of AD. AD in addition with few smooth panels; along anterior margin polygonal pattern replaced by roughened cuticle; posterior margin convex. OC wider than long, with few pits and large central porc. Membranous cuticle posterior to AD with pair of small platelets. PD with two pairs of setae. AE among pitted polygons with four pairs of round to ovoid smooth panels; epimeral pores conspicuous; two pairs of setae. PE with three pairs of ventral setae but no dorsal seta seen. GA tripartite; anterior *pars sclerosum* poorly developed; anterior margin of posterior *pars sclerosum* distinctly concave; three pairs of pgs, the two anterior pairs not closely associated; one pair sgs seen.

Gnathosoma 0.92-0.94 times the length of idiosoma. Surface of ventral gnathosomal base almost smooth, only few scattered pits overlying ovoid scars (Fig. 5C). Dorsal gnathosomal base on anterior 1/2 with small pits arranged in a polygonal pattern; series of scars in deeper cuticular layers (Fig. 5D). Palps conspicuously slender.

Cuticle of all leg segments slightly roughened but without pits. Chaetotaxy (trochanter - tibia): I 1-1-6-5-8 (Fig. 5E), II, 1-1-4-4-5 (Fig. 5F), III 1-1-2-3-6 (Fig. 5G), IV 1-1-2-3-6 (Fig. 5H). Bipectinate setae (I-II-III-IV): telofemur 3-1-0-0, genu 2-1-0-0, tibia 5-2-3-3, tarsus 1-0-0-0. Tarsi I and II with pair of doubled pas, one seta of each duplet much smaller than the other; tarsus III medially with doubled pas (one seta of each duplet much smaller than the other), laterally with pas singlet; all tarsi with solenidion. Leg IV similar to leg III except for both setae on telofemur of subequal length, one seta on genu longer than the other, and the tarsus possessing a pair of pas singlets.

Male. Unknown.

REMARKS. The only other *Scaptognathus* species with the combination of five and two bipectinate setae on tibiae I and II respectively, and three bipectinate setae on telofemur I, are *S. ornatus* Bartsch, 1984 (see below), *S. punctatus* Bartsch, 1981, and *S. insularis* sp. nov. *S. gracilipalpus* differs from them by having two instead of three pairs of setae on the AE, three instead of four setae on the PE, much more slender palps, and the anterior margin of the posterior *pars sclerosum* in the female distinctly concave. A further peculiarity by which *S. gracilipalpus* may also differ from all other congeners is in the presence of solenidia on tarsi III and IV. These have not been reported for any other species of *Scaptognathus* but due to their small size could have been overlooked.

***Scaptognathus insularis* sp. nov.**
(Fig. 6)

ETYMOLOGY. Latin, *insularis* = of islands, referring to the species having been collected on a coral cay.

MATERIAL. HOLOTYPE: QMS105438, ♀, GBR, Bylund Cay, ca. 21°47'S 152°24'E, 17 Apr. 1998, coarse sand just above low tide mark, sediment depth 10-20cm. PARATYPES: QMS105439, ♀, A59/99 (ZMH), ♀, ANIC ♀, data as for holotype.

DESCRIPTION. *Female.* Idiosoma 375-415 long (holotype 415). Four pairs of setae in membranous cuticle (Fig. 6A). AD wider than long,

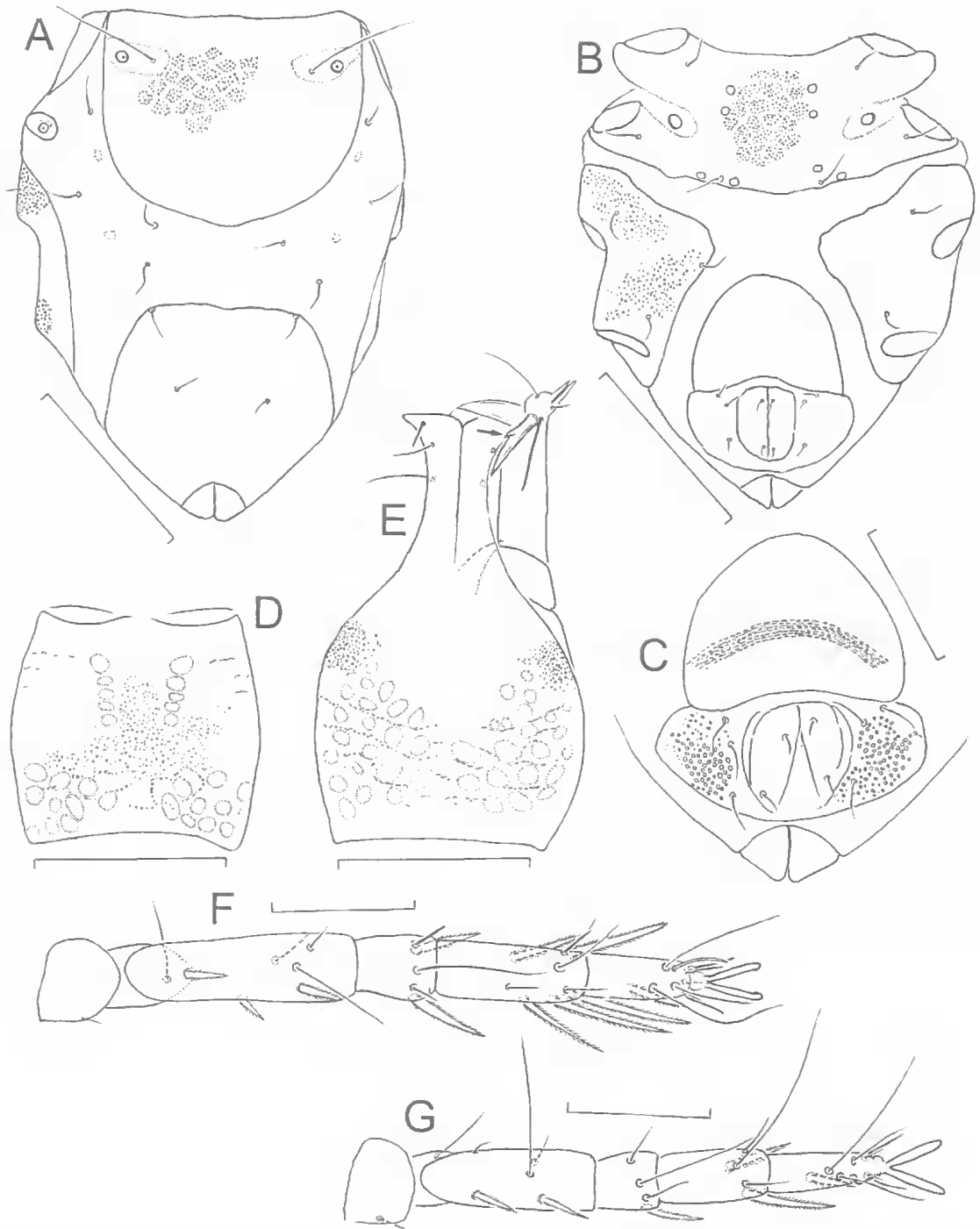


FIG. 6. *Scaptognathus insularis* sp. nov., ♀. A, idiosoma, dorsum; B, idiosoma, venter; C, genitoanal plate; D, gnathosomal base, dorsum; E, gnathosoma, venter; F, left leg I, dorsal view; G, left leg II, dorsal view. Scale: A, B, D, E = 100µm; C, F, G = 50µm.

posterior margin distinctly convex; numerous irregularly shaped pits within polygons; no canaliculi in deeper cuticular layers; pair of setae much longer than other idiosomal setae and inserted at level of gland pores in smooth area of plate. OC wider than long; with large central pore. PD furnished with numerous pits as on AD; usually two pairs of setae on PD, of which the anterior pair is situated at the extreme anterior margin of plate; in two specimens one seta of the anterior pair inserts in membranous cuticle anterior to plate. AE with ornamentation similar to that on AD; two pairs of large epimeral pores; several relatively wide but shallow panels near centre of plate and along posterior margin (Fig. 6B). GA bipartite, anterior margin of *pars membranousum* and *pars sclerosum* (Fig. 6C) convex; three pairs of pgs of which the two anterior pairs are closely associated; two pairs of sgs.

Dorsal gnathosomal base evenly pitted throughout anterior 2/3 (Fig. 6D). Ventral gnathosomal base with fewer pits, these forming transverse bands; anterolaterally with an areola consisting of relatively deep pits. Dorsal and ventral gnathosomal base in deeper layers with rounded scars (dotted in Fig. 6D,E). The smaller of the two palp claws with protuberance (Fig. 6E, arrowed).

Trochanters and telofemora of all legs with numerous pits laterally. Chaetotaxy (trochanter-tibia): I 1-1-6-5-9 (Fig. 6F), II 1-1-5-4-5 (Fig. 6G), III 1-1-2-3-5/6, IV 1-1-2-3-5/6. Bipectinate setae (I-II-III-IV): telofemur 3-2-0-0; genu 2-1-0-0, tibia 5-2-2/3-2/3, tarsus 1-1-0-0. Tarsus I with two ventral setae and pair of doubled pas. Tarsus II with pair of doubled pas, one seta in each duplet minute. Tarsi III and IV with pair of pas singlets.

REMARKS. The only other species of *Scaptognathus* with 3-2-0-0 bipectinate setae on the telofemora (I-IV respectively) are *S. punctatus* Bartsch, 1981, and *S. ornatus* Bartsch, 1984. *S. insularis* can be distinguished from *S. ornatus* by lacking ornamentation on the palps and lacking well defined areolae on the legs, and from *S. punctatus* by the female idiosoma being 375-415 µm instead of 229-257 µm long. A further difference between both species is in the number of pgs in the female. *S. insularis* possesses three pairs, while *S. punctatus* has two pairs (Bartsch, 1982).

Scaptognathus kolymbus sp. nov.
(Fig. 7)

ETYMOLOGY. Greek, *kolymbos* = diver, swimmer.

MATERIAL. HOLOTYPE: QMS105427, ♀, Coral Sea (Queensland Plateau), Lihou Reef, ca. 17°25'S 151°40'E, 20 July 1998, D. Fenner, sand at 5m. PARATYPES: QMS105428, ♀, GBR, Boulder Reef, 8 Oct. 1998, A. Thompson, coarse sand at 2m; ♀, A60/99 (ZMH), GBR, Yonge Reef, ca. 14°36'S 145°38'E, 20 Sep. 1998, medium coarse sand at 7m.

DESCRIPTION. *Female*. Idiosoma 248-277 long (holotype 248). Four pairs of setae inserted in membranous cuticle (Fig. 7A). AD of subequal length and width; pair of setae longer than other dorsal setae; covered with numerous minute pits, except for a small area surrounding each seta; numerous canaliculi and faint reticulation pattern visible when focusing deeper. OC of subequal length and width; with large central pore. PD almost rectangular; ornamentation similar to that of AD; two pairs of setae as illustrated (Fig. 7A). AE posteriorly drawn out into a broad nose; pitted except for anterior parts of epimeral fields I and II (Fig. 7B); GA bipartite; pitted *pars sclerosum* with three pairs of pgs, the two anterior ones closely associated; two pairs sgs.

Gnathosomal base dorsally with small pits over the entire anterior 2/3 (Fig. 7C); ventrally with pits only laterally (Fig. 7D); in deeper cuticular layers dorsally as well as ventrally with larger scars (dotted in Fig. 7C,D). Widened anterior part of rostrum with three pairs of setae, narrow posterior part with one pair.

Cuticle of all leg segments relatively smooth, not covered by pits as deep as those on dorsal plates. Chaetotaxy (trochanter-tibia): I 1-2-5-4-9 (Fig. 7E), II 1-2-4-5-6 (Fig. 7F), III 1-1-2-3-7 (Fig. 7G), IV 1-1-2-3-7 (Fig. 7H). Bipectinate setae (I-II-III-IV): telofemur 2-0-0-0, genu 2-1-0-0, tibia 6-3-4-4, tarsus 1-1-0-0.

Male. Unknown.

REMARKS. *S. kolymbus* is most similar to *S. pauciporus* Bartsch, 1977a, from the Galapagos, but can be distinguished from it by the posterior margin of the AE being strongly convex and medially drawn out into a broad nose. A second distinguishing character is the number of setae on telofemur II, three in *S. pauciporus* and four in *S. kolymbus*. The number of setae on telofemur I (four illustrated for *S. pauciporus*, five in *S. kolymbus*) does not reliably distinguish between both species, as some specimens of *S. pauciporus*

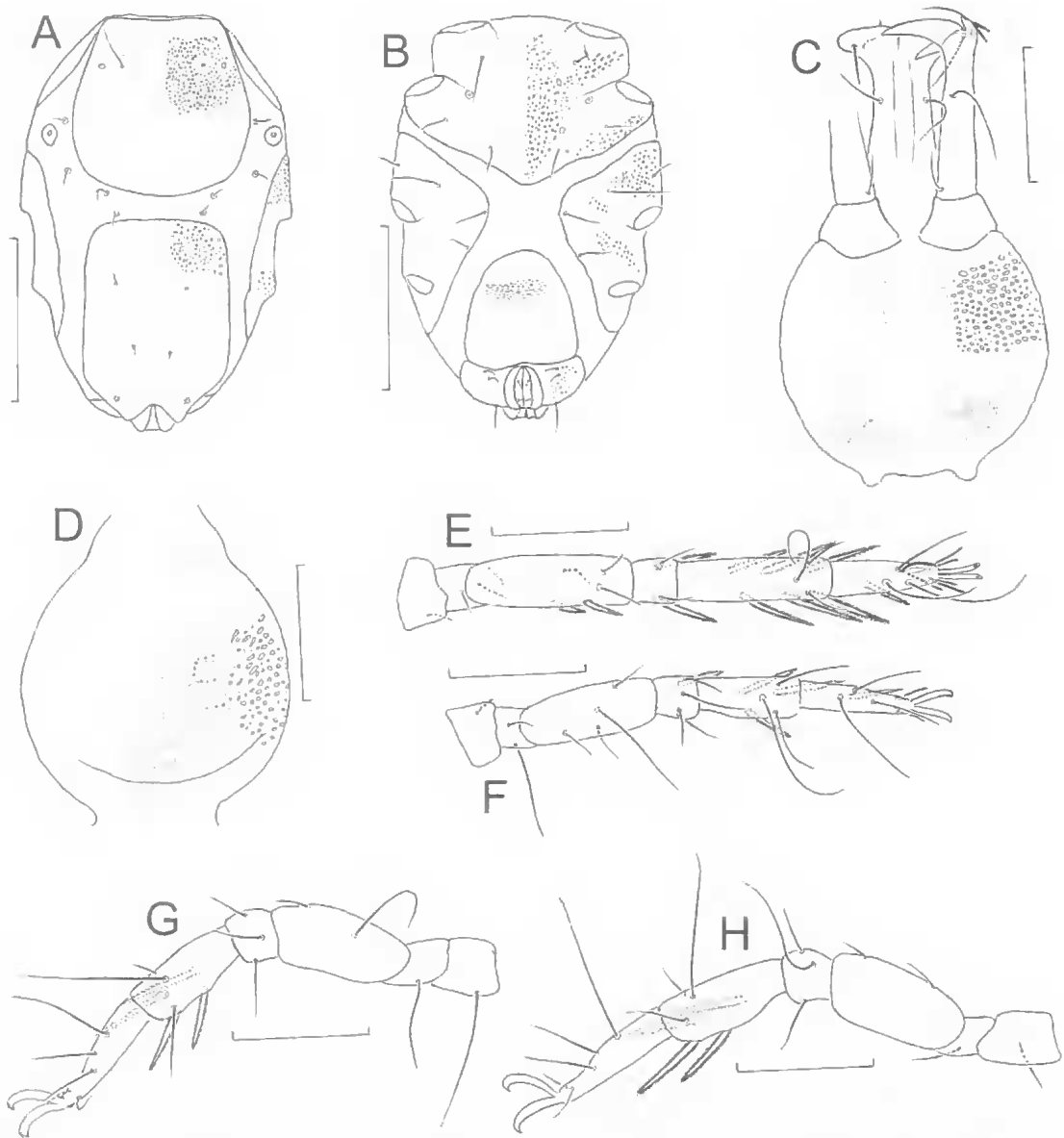


FIG. 7. *Scaptognathus kolymbus* sp. nov., adult. A, idiosoma, dorsum; B, idiosoma of ♀, ventral view; C, gnathosoma, dorsal view; D, gnathosomal base, ventral view; E, leg I, dorsal view; F, leg II, dorsal view; G, leg III, dorsolateral view; H, leg IV, dorsolateral view. Scales: A, B = 100µm; C, D, E, F, G, H = 50µm.

have also five setae on that segment (Bartsch, pers. comm.).

***Scaptognathus kunzi* Bartsch, 1988**
(Fig. 8A-C, E-K)

Scaptognathus kunzi Bartsch, 1988: 219. Abé, 1990a: 361.

MATERIAL. QMS105430, ♀, GBR, Elizabeth Reef, 19°20.12'S 149°02.85'E, 25 Dec. 1997, coral rubble at 10m; QMS105431, ♀, GBR, Pandora Reef, 18°48.84'S

146°26.16'E, 22 Jan. 1998, sand & rubble at 0.2 m; ANIC ♀, GBR, Great Palm I., channel, 18°40.60'S 146°34.29'E, 8 Apr. 1998, sand & rubble at 6m; A61/99 (ZMH), ♀, GBR, Great Palm I., Cannon Bay, 18°40.98'S 146°35.19'E, 8 Apr. 1998, sand - gravel at 3m; QMS105432, ♀, GBR, Yonge Reef, ca. 14°36'S 145°38'E, 10 Oct. 1998, coarse sand & rubble at 9m.

DESCRIPTION. *Female*. Idiosoma in uncompressed specimen 202 long, in compressed

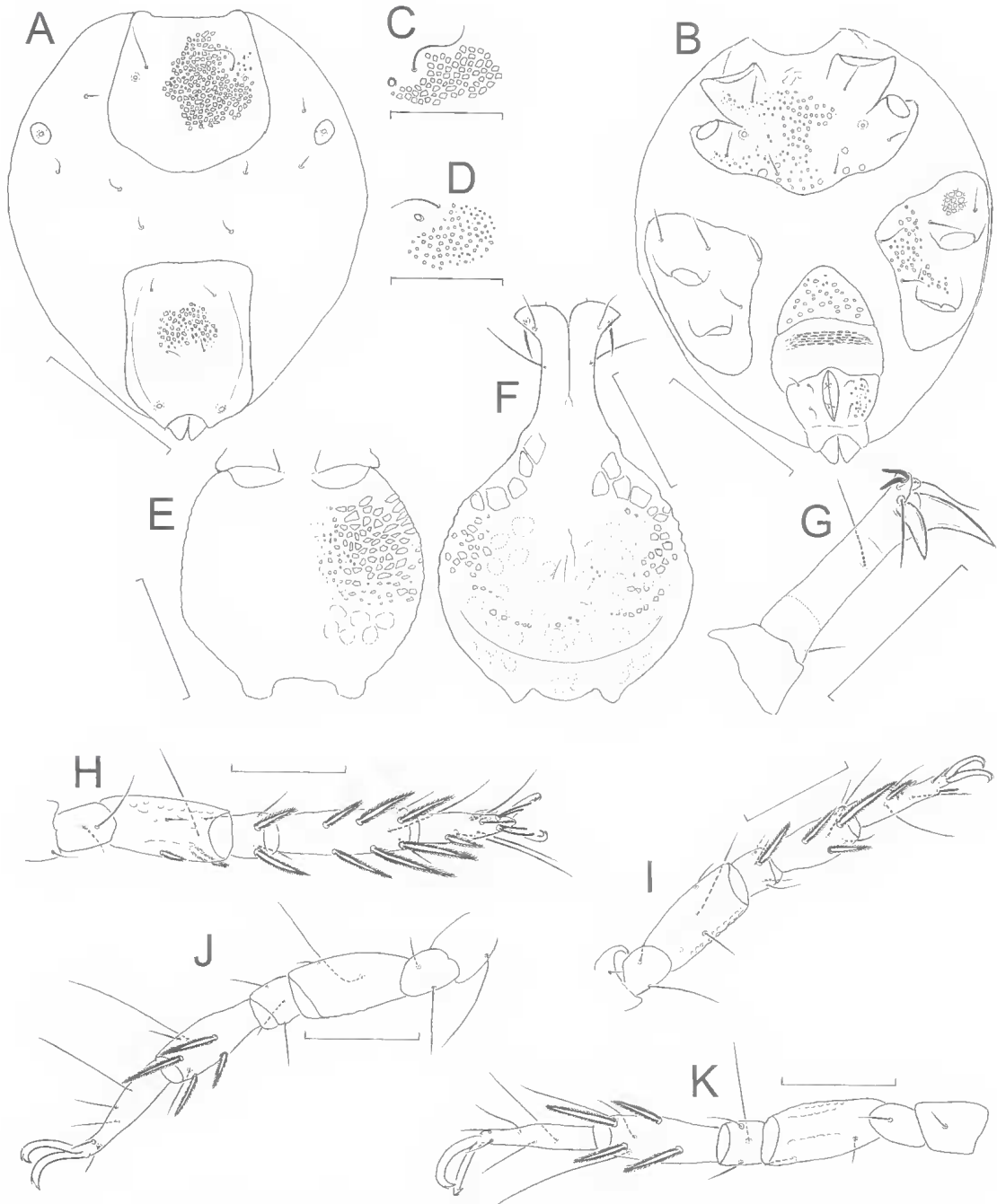


FIG. 8. A-C, E-K, *Scaptognathus kunzi* Bartsch, adult; A, idiosoma, dorsum; B, idiosoma of ♀, venter; C, detail of ornamentation of anterior dorsal shield (AD) near left seta and pore; E, gnathosomal base, dorsal view; F, gnathosomal base and rostrum, ventral view; G, palp, dorsal view; H, leg I, ventral view; I, leg II, ventromedial view; J, leg III, ventromedial view; K, leg IV, ventral view. D, *Scaptognathus oceanus* sp. nov., ♀; detail of ornamentation of anterior dorsal shield (AD) near left seta and pore. Scales: A, B = 100µm; C, D = 50µm; H-K = 50µm; E, F, G = 50µm.

specimens 252-275 long; four pairs of setae in membranous cuticle (Fig. 8A) on minute subcuticular platelets. AD rounded posteriorly; ornamented with pits, which on average are wider than the cuticular bars between them (Fig. 8C); delicate canaliculi in deeper cuticular layers; pair of setae inserted anteromedial to pair of pores. OC with large central pore. PD almost rectangular; ornamentation similar to that of AD; posteriorly with pair of gland pores; two pairs of setae as illustrated (Fig. 8A). AE ornamented with shallow pits (Fig. 8B) which are spaced further apart and are more rounded than those on AD and PD; posteriorly with few wider pits. PE anterior to insertions of leg III ornamented as on AD, on remainder of plate as on AE. GA tripartite; anterior *pars sclerosum* with shallow pits, posterior *pars sclerosum* with slightly deeper pits, three pairs of pgs and two pairs sgs.

Gnathosomal base dorsally in anterior 2/3 with irregularly shaped angular panels (Fig. 8E) and in posterior 1/3 with larger but less conspicuous panels; ventrally with several small panels and few larger panels along anterolateral margin; in deeper cuticular layers with several large round or oval scars (dotted in Fig. 8F). Rostrum apically widened, with one of the dorsal setae distinctly heavier than the other. Palp as in Fig. 8G.

Chaetotaxy (trochanter – tibia): I 1-2-5-4-9 (Fig. 8H), II 1-2-4-5-6 (Fig. 8I), III 1-2-2-3-7 (Fig. 8J), IV 1-1-2-3-7 (Fig. 8K). Bipectinate setae (I-II-III-IV); telofemur 2-0-0-0, genu 2-1-0-0, tibia 6-3-4-4, tarsus 1-1-0-0. Tarsus I with pair of doubled pas. Tarsi II-IV with pair of pas singlets.

Male. Unknown.

REMARKS. *Scaptognathus kunzi* was previously only known from the Hawaiian holotype. Comparison between it and the Australian material revealed slight differences in the position of the setae on the PD. In the Australian material the distance between the setae of the anterior pair is 1.33 – 1.92 times greater than that between the setae of the posterior pair in contrast to 1.1 times in the holotype. Further, in most Australian specimens the anterior pair of setae on the PD is inserted somewhat closer to the anterior margin of the plate and the pore on the AD is positioned slightly more posterior in relation to the seta on the AD. It may be that these differences indicate a separation between the Hawaiian and Australian populations. However, this remains uncertain until the variability of these characters in Hawaii can be assessed.

Meanwhile Australian and Hawaiian specimens are regarded as conspecific.

***Scaptognathus monstrosus* sp. nov.**
(Fig. 9)

ETYMOLOGY. Latin, *monstrum* = an abnormal wonder.

MATERIAL. HOLOTYPE: QMS105429, ♀, GBR, Elizabeth Reef, 19°20.12'S 149°02.85'E, 25 Dec. 1997, coarse sand & rubble at 3m. PARATYPE: QMS 105440, ♀, GBR, Reef 21-149, 21°06'S 151°43'E, reef flat, 22 Apr. 1999, coarse sand at 0.5m.

DESCRIPTION. *Female.* Idiosoma 394-396 (396 in holotype) long. Four pairs of setae in membranous cuticle (Fig. 9A). AD and PD with conspicuous reticulation formed by densely packed rows of papillae; floor of each polygon with numerous scattered papillae and in deeper cuticular layers delicate canaliculi. PD reticulated only on anterior 1/2; posterior 1/2 papillate. Anterior margin of AD with protruding edges of gnatho-idiosomal articulation and slightly posterior a pair of pore-like marks; pair of setae inserted distinctly posterior to pair of gland pores. OC wider than long (Fig. 9B); large pore near inner margin. PD with two pairs of setae, gland pores not seen. AE with a deeply excavated anterior part which is distinctly reticulated throughout but lacks the minute papillae and delicate canaliculi present on remainder of plate (Fig. 9B); epimeral processes large and pair of epimeral pores conspicuous; posterior margin of plate convex. PE with ornamentation similar to that of AE. GA undivided, with ornamentation similar to that of AE but reticulation less developed and posteriorly breaking up into isolated cuticular papillae; three pairs of pgs and three pairs of sgs.

Gnathosomal base joined to idiosoma by a sclerite which attaches on the dorsal flank of the gnathosomal base (Fig. 9C, arrowed). Rostrum broad throughout (Fig. 9D). Ventral gnathosomal base with reticulate ornamentation, in deeper integumental layers with rounded scars (dotted in Fig. 9D), anteriorly finely punctate. Dorsal gnathosomal base with scale-like pattern posterolaterally (Fig. 9C), in deeper integumental layers with row of 5-6 scars on either side. Palps obscured by broad rostrum (Fig. 9D); three large claws apically.

Tibia of leg I slender, almost twice as long as tarsus (excluding claws) (Fig. 9E). Chaetotaxy (trochanter – tibia): I 1-1-4-4-9 (Fig. 9E), II 1-1-4-4-5 (Fig. 9F), III 1-1-3-3-5 (Fig. 9G), IV 1-1-3-3-5 (Fig. 9H). Bipectinate setae (I-II-III-IV):

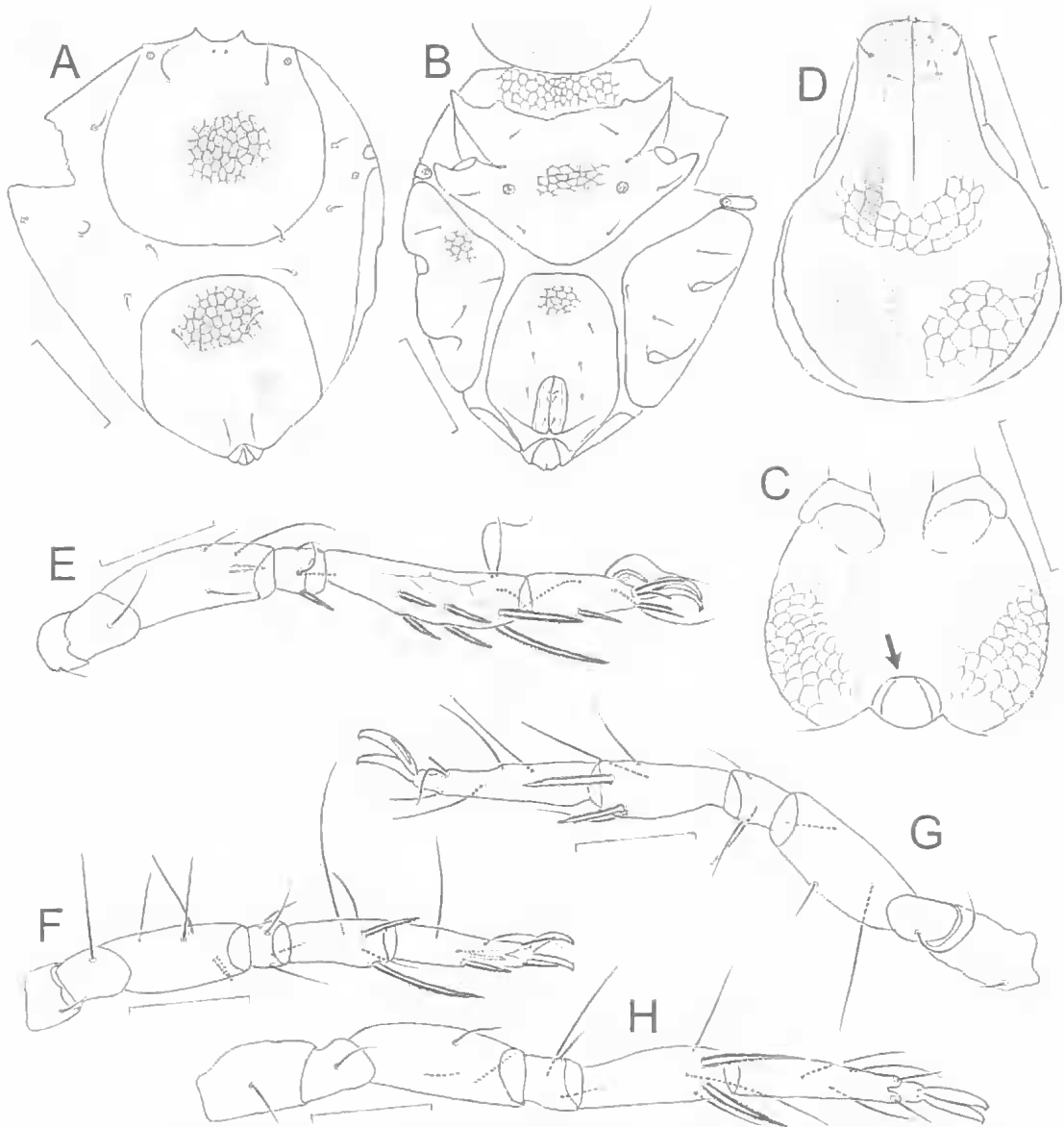


FIG. 9. *Scaptognathus monstrosus* sp. nov., ♀. A, idiosoma, dorsum; B, idiosoma, venter; C, gnathosomal base, dorsal view; D, gnathosoma, ventral view; E, leg I, ventromedial view; F, leg II, ventral view; G, leg III, ventromedial view; H, leg IV, ventral view. Scales: A, B, C, D = 100µm; E, F, G, H = 50µm.

telifemur 1-1-0-0, genu 1-0-0-0, tibia 6-2-2-2, tarsus 1-1-0-0. Tarsus I with pair of doubled pas. Tarsus II with pair of pas singlets. Tarsus III with pas singlet and doubled pas. Tarsus IV with pair of ventral pas singlets. Claws of tarsi I and II more delicate than those of III and IV. Tibiae and telifemora I and II posteriorly with a very wide mesh of delicate cuticular bars (as shown for tibia I in Fig. 9E).

REMARKS. *Scaptognathus monstrosus* is most similar to *S. peregrinus* Bartsch, 1993a, from Rottneest Island. Both species share the wide rostrum and the peculiar sclerite which connects gnathosoma and idiosoma, both of which are unknown for other species of *Scaptognathus*. However, *S. monstrosus* is significantly larger than *S. peregrinus* (idiosoma length of *S. peregrinus* 297µm) and possesses a bipectinate seta

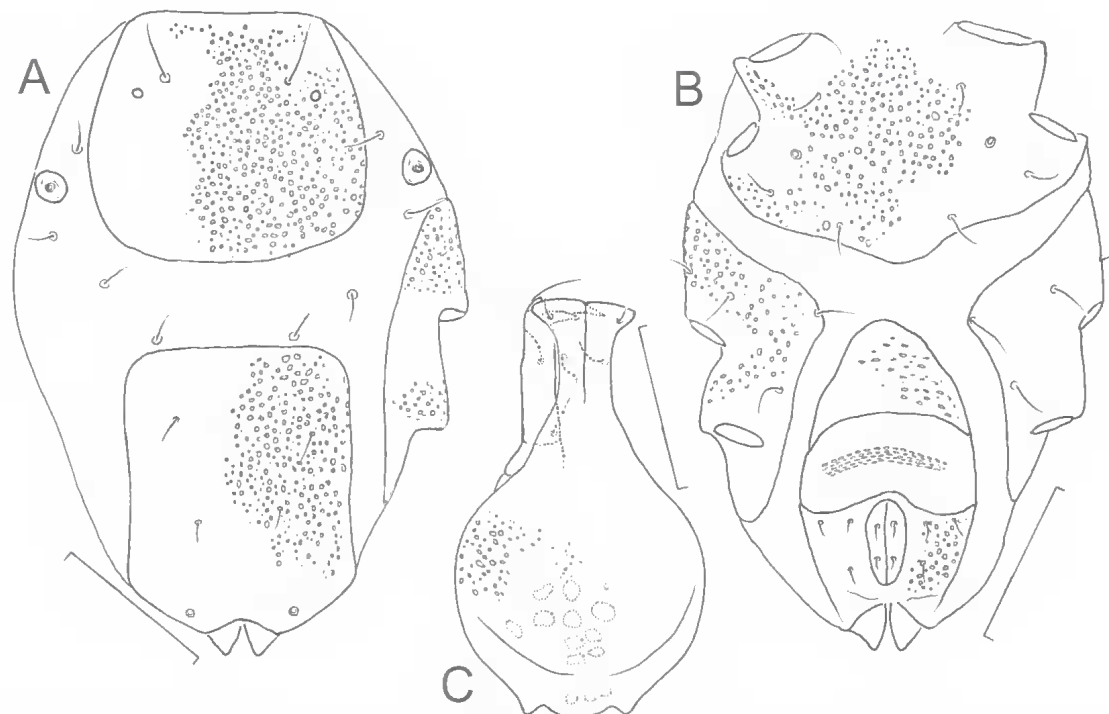


FIG. 10. *Scaptognathus oceanus* sp. nov., ♀. A, idiosoma, dorsum; B, idiosoma, venter; C, gnathosoma, venter. Scales: A, B, C = 50µm.

on genu I, which is absent in *S. peregrinus*. *S. monstrosus* also differs from *S. peregrinus* by having two instead of one bipectinate setae on tibia II, five instead of six setae on tibia III and three instead of two claws on the apical palp segment. Based on the similarities between both species it may be argued that *S. monstrosus* is simply the undescribed female of *S. peregrinus*. However, this is unlikely as the number of palp claws and the number of leg setae are unknown to differ between sexes in *Scaptognathus*.

S. monstrosus is the only species of *Scaptognathus* for which the female is known to have an undivided GA. However, the female of *S. peregrinus* is unknown as yet and may share this character with *S. monstrosus*.

***Scaptognathus oceanus* sp. nov.**
(Figs 8D, 10)

ETYMOLOGY. Latin, *oceanus* = the sea.

MATERIAL. HOLOTYPE: QMS105433, ♀, Coral Sea (Queensland Plateau), Herald Cays, 16°57.171'S 149°12.036'E, 16 Sep. 1998, G.A. Díaz-Pulido, coarse sand at 5-15m. PARATYPES: QMS105434, ♀, A62/99 (ZMH), ♀, ANIC ♀, data as for holotype.

DESCRIPTION. *Female*. Idiosoma 190-202 long (holotype 202). AD slightly widened in posterior 1/2; ornamented with pits, which on average are not wider than the space between them (Figs 8D, 10A); pair of setae inserted anteromedial to pair of pores. OC with large central pore. PD almost rectangular; ornamentation similar to that of AD; posteriorly with pair of gland pores; two pairs of setae as illustrated (Fig. 10A). AE ornamented with shallow pits which are spaced further apart than those on AD and PD (Fig. 10B). Dorsal part of PE anteriorly and posteriorly pitted, remainder of dorsal PE smooth. GA tripartite; anterior *pars sclerosum* with shallower pits than posterior *pars sclerosum*; three pairs of pgs, the two anterior pairs at same level; two pairs sgs.

Gnathosoma (Fig. 10C) distinctly shorter than idiosoma. Dorsal gnathosomal base with irregularly shaped pits throughout anterior 2/3 (as for *S. kunzi*, Fig. 8E); ventral gnathosomal base with pits laterally; in deeper cuticular layers with several large round or oval scars (dotted in Fig. 10C). Rostrum apically widened.

Morphology and setation of legs as illustrated for *S. kunzi*. Chaetotaxy (trochanter - tibia): I 1-2-5-4-9, II 1-2-4-5-6, III 1-2-2-3-7, IV

1-I-2-3-7. Bipectinate setae (I-II-III-IV): telofemur 2-0-0-0, genu 2-1-0-0, tibia 6-3-4-4, tarsus 1-1-0-0. Tarsus I with pair of doubled pas. Tarsi II-IV with pas singlets.

Male. Unknown.

REMARKS. *Scaptognathus oceanus* closely resembles *S. kunzi* Bartsch, 1988, *S. sabularius* André, 1961, and *S. terevinus* Bartsch, 1986, in the number of bipectinate setae of the legs and the tripartite GA. It differs from *S. kunzi* in the pits on AD and PD being on average not wider than the spaces between them and from *S. sabularius* and *S. terevinus* by having only one pair of setae inserted on the AD instead of two pairs.

Among the material I examined from the type locality is a female (QMS105435) whose GA is bipartite but agrees with the above description. It is unknown whether this specimen represents an unusual specimen of *S. oceanus* or belongs to a different species. If it belongs to *S. oceanus* then the partition of the GA may not always be a reliable character to separate between species.

Scaptognathus ornatus Bartsch, 1984
(Fig. 11)

Scaptognathus ornatus Bartsch, 1984: 192. Abé, 1990a: 361.

MATERIAL. QMS105398/105399, 2♀, A63/99 (ZMH), ♀, ANIC ♀, Coral Sea (Queensland Plateau), Herald Cays, 16°57.171'S 149°12.036'E, 16 Sep. 1998, G.A. Díaz-Pulido, coarse sand at 5-15m; QMS105400-105401, 2♀, GBR, Carter Reef, ca. 14°32'S 145°35'E, 11 Nov. 1998, coarse sand at 0.5m.

DESCRIPTION. *Female.* Idiosoma in Australian specimens 291-343 long. Four pairs of setae in membranous cuticle (Fig. 11A). AD wider than long; ornamented with a network of pitted polygons; area just posterior to level of setae with pits shallower and less densely packed than on remainder; area surrounding pair of pores and pair of setae smooth; setae much longer than setae in membranous cuticle. OC slightly wider than long, with several small pits and a large central pore. Membranous cuticle posterior to AD with three pairs of small platelets. Dorsal part of PE pitted anteriorly and posteriorly, ventral part over most of its surface. PD with ornamentation similar to that of AD, but reticulation less conspicuous or absent on median part of plate; two pairs of setae as illustrated (Fig. 11A). AE much shorter than wide; pitted and with reticulate ornamentation similar to dorsum, but pits shallower. GA bipartite (Fig. 11B), *pars sclerosum* with three pairs of pgs of which the two anterior

pairs are closely associated. GO with two pairs sgs.

Dorsal gnathosomal base with polygonal pattern over most of its surface (Fig. 11C), most polygons with numerous minute pits, but those closer to posterior margin with pits only along the inside of each polygon. Ventral gnathosomal base with deeply pitted polygons anterolaterally (Fig. 11D), remainder furnished with pits forming a loose network under which in deeper cuticular layers lay larger ovoid scars (Fig. 11D). Proximal 1/2 of P-2 with dorsal ornamentation as illustrated (Fig. 11C).

All leg segments except genu I with pitted areolae (Fig. 11E-H). Chaetotaxy (trochanter - tibia): I 1-1-6-5-9 (Fig. 11E), II, 1-1-5-4-5 (Fig. 11F), III 1-1-2-3-6 (Fig. 11G), IV 1-1-2-3-6 (Fig. 11H). Bipectinate setae (I-II-III-IV): telofemur 3-1-0-0, genu 2-1-0-0, tibia 5-2-3-3, tarsus 1-1-0-0. Tarsi I and II with pair of doubled pas; tarsus III medially with doubled pas, laterally with pas singlet; tarsus IV with pair of pas singlets. Paired claws of all legs with minute accessory process but no pecten.

Male. Unknown.

REMARKS. The above material constitutes the first specimens of this species recorded from Australia. Other records are from Venezuela and Puerto Rico (Bartsch, 1984).

The posteriormost seta on telofemur II in the Australian specimens appears to be slightly more delicate than in the type material, and the bipectination of this seta, described by Bartsch (1984), could not be seen under oil immersion. However these differences are not regarded here as sufficient to separate Australian and South American/Puerto Rican specimens.

S. ornatus is most similar to *S. punctatus* Bartsch, 1981 (see also Bartsch, 1982), from the Mozambique channel. Both species can be distinguished by the extent of the pitted areolae on the legs. In *S. ornatus* such areolae are present on almost all leg segments, while in *S. punctatus* only the telofemora possess them (Bartsch, 1984).

KEYS TO DESCRIBED AUSTRALIAN
LOHMANNELLINAE

LOHMANNELLA

- Second most proximal palp segment (P-2) with two cuticular protuberances *L. arenaria* (see Bartsch, 1993a)
- P-2 with one cuticular protuberance *L. dictyota* (see Bartsch, 1992; present paper)
- P-2 without a protuberance *L. pinggi* (see Otto, 1994)

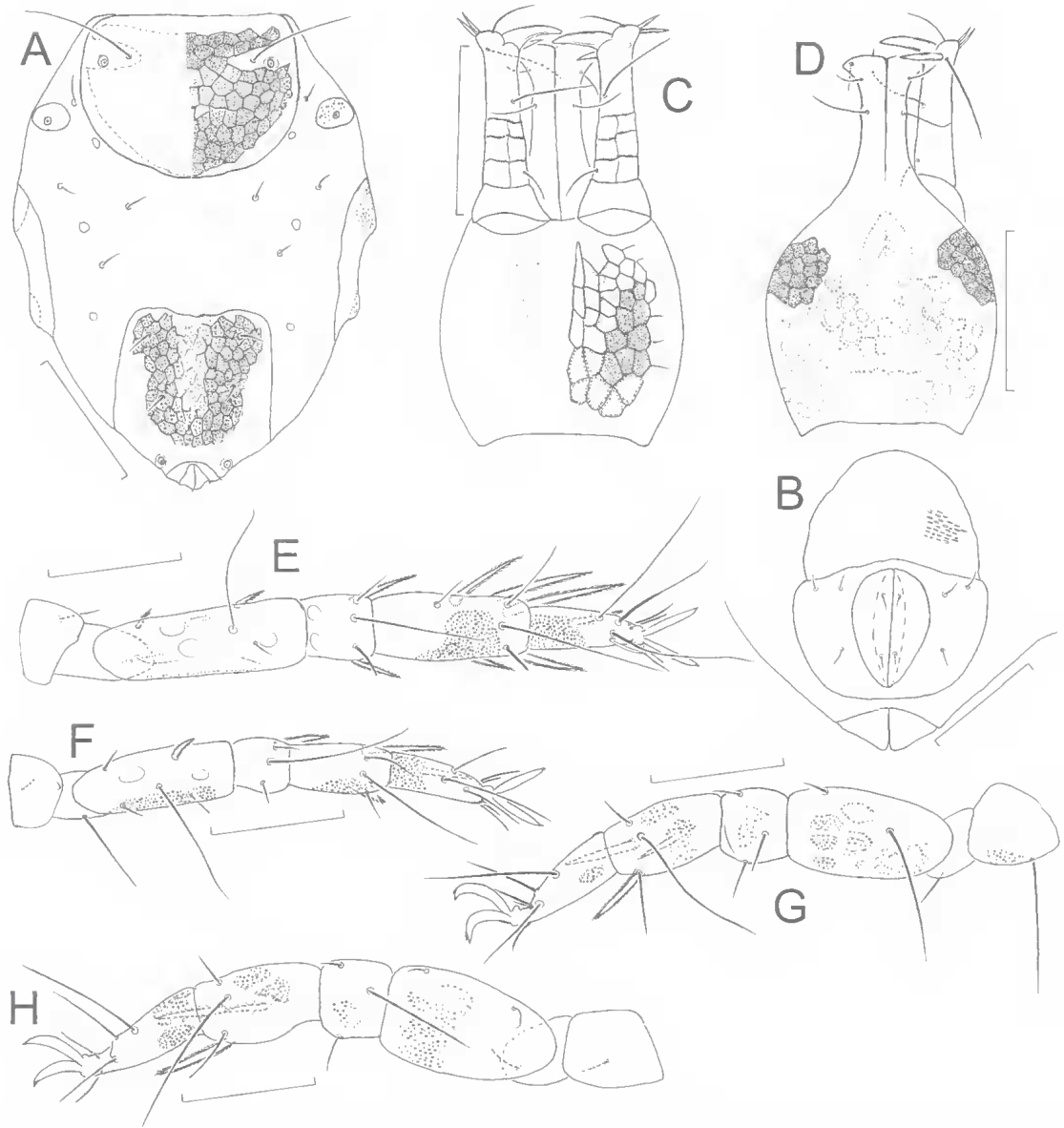


FIG. 11. *Scaptognathus ornatus* Bartsch, adult. A, idiosoma, dorsum; B, genitoanal shield of ♀; C, gnathosoma, dorsal view; D, gnathosoma, ventral view; E, leg I, dorsal view; F, leg II, dorsal view; G, leg III, dorsolateral view; H, leg IV, dorsolateral view. Scales: A, C, D = 100µm; B, E, F, G, H = 50µm.

SCAPTOGNATHIDES

- | | |
|---|--|
| <p>1. Ocular plates (OC) ca. four times longer than wide
 <i>S. australis</i> (see Bartsch, 1993a)
 OC ca. twice as long as wide (Fig. 1A) 2</p> <p>2. Anterior dorsal plate (AD) and posterior dorsal plate (PD)
 with polygonal pattern (Fig. 3A); telofemora with
 undulated ventral ridge (Fig. 3C-F); tarsus III with
 thickened proximal seta (Fig. 3E)
 <i>S. undulatus</i> sp. nov.</p> | <p>AD and PD finely punctate and finely or coarsely pitted
 but no polygonal pattern (Fig. 1A, 2A); telofemora
 without an undulated ridge (Fig. 1E-H); tarsus III
 without thickened proximal seta (Fig. 1G) 3</p> <p>3. Dorsal plates with wide pits (foveae) (Fig. 2A); OC
 posteriorly with a minute seta (Fig. 2A)
 <i>S. tomkinsae</i> sp. nov.</p> <p>Dorsal plates with smaller pits (Fig. 1A); OC without
 minute posterior seta <i>S. heraldensis</i> sp. nov.</p> |
|---|--|

SCAPTOGNATHUS

1. Rostrum broad throughout (Fig. 9D) 2
 Rostrum posteriorly slender and apically widened
 (Fig. 4D) 3
2. Genu I with one bipectinate seta (Fig. 9E); tibia II with two
 bipectinate setae (Fig. 9F); tibia III with five setae (Fig.
 9G) *S. monstrosus* sp. nov.
 Genu I without bipectinate seta, tibia II with one bipec-
 tinate seta; tibia III with six setae *S. peregrinus*
 (see Bartsch, 1993a)
3. Tibiae I-IV with 6-3-4-4 bipectinate setae
 (Fig. 7E-H) 4
 Tibia I-IV with 5-2-2/3-2/3 bipectinate setae
 (Fig. 4F-I) 6
 Tibia I-IV with 6-4-4-4 bipectinate setae: *S. bassianus*
 (see Abé & Green, 1994)
4. Female GA bipartite, basifemur III with one seta
 *S. kolymbus* sp. nov.
 Female GA tripartite; basifemur III with two setae 5
5. Pits on AD and PD on average distinctly wider than the
 spaces between them (Fig. 8A,C)
 *S. kunzi* (see Bartsch, 1988; present paper)
 Pits on AD and PD on average not wider than the spaces
 between them (Fig. 8D; 10A) *S. oceanus* sp. nov.
6. Telo femur I with two bipectinate setae 7
 Telo femur I with three bipectinate setae 8
7. Tarsi I and II with pitted areolae; three pairs of setae in
 dorsal membranous cuticle; female with three pairs pgs;
 telofemur II with one bipectinate seta. *S. australis*
 Bartsch (see Bartsch, 1993a)
- Tarsi I and II without pitted areolae (Fig. 4F-I); four pairs
 of setae in dorsal membranous cuticle (Fig. 4A); female
 with two pairs pgs (Fig. 4B); telofemur II without
 bipectinate seta (Fig. 4G) *S. exquisitus* sp. nov.
8. Most leg segments with well defined deeply pitted areolae
 (Fig. 11E-H); palp with dorsal ornamentation as shown
 in Fig. 11C *S. ornatus* Bartsch (see Bartsch, 1984)
 All leg segments without such well defined deeply pitted
 areolae; palp without dorsal ornamentation 9
9. Telo femur II with one bipectinate seta (Fig. 5F)
 *S. gracilipalpus* sp. nov.
 Telo femur II with two bipectinate setae (Fig. 6G)
 *S. insularis* sp. nov.

COMMENTS

Including the species described here, 28 species of *Lohmannella*, 10 of *Scaptognathides* and 27 of *Scaptognathus* are now described world-wide. The presence of eight *Scaptognathus* and three *Scaptognathides* species in the Coral Sea comes as no surprise as both genera are well represented in warm water regions (Abé & Green, 1994; Bartsch, 1996). The poor representation of *Lohmannella* was also to be expected as this genus appears to have reached its highest diversity in colder areas, for example Antarctica (Bartsch, 1993b; Newell, 1984).

Perhaps the most interesting aspect of the Lohmannellinae described in the present paper is

the finding of *Scaptognathus monstrosus* sp. nov. This is the only species of its genus where the female is known to have an undivided genitoanal plate and three palp claws. Present in all other halacarid genera, the undivided genitoanal plate is probably a plesiomorphic character and if so may indicate that *S. monstrosus* is perhaps an early derivative species in *Scaptognathus*. Alternatively, the undivided GA could be due to reversal, but this appears less parsimonious.

Different opinions exist in regard to the taxonomic rank of Lohmannellinae (subfamily versus family rank) and the number of genera it contains. Abé (1998) following the traditional view of Newell (1947), Viets (1956) and Bartsch (1983, 1996) lists four lohmannelline genera, *Scaptognathus*, *Scaptognathides*, *Lohmannella* and *Porolohmannella*. By contrast, Newell (1984) decided to elevate Lohmannellinae to family and to include in it all those genera which have the palps inserted dorsally on the gnathosoma, *Lohmannella*, *Scaptognathus*, *Simognathus*, *Porolohmannella*, *Saldanellonyx*, *Parasaldanellonyx*, and further genera by implication. While the position of the palp dorsally on the gnathosoma may indeed be a synapomorphy for Lohmannellidae it is unsatisfactory in my view to alter the classification on the basis of this single character. Since the palps are also inserted dorsally in the Pezidae Harvey, 1990, which Harvey (1990) considers to be the sister group of the remaining halacaroids, dorsal palp insertions may be a plesiomorphy for Lohmannellidae. I am therefore inclined to concur with Abé (1998) to maintain Lohmannellinae as a subfamily of four genera, although in my view the monophyly of this subfamily is also little supported.

ACKNOWLEDGEMENTS

I thank the Australian Biological Resources Study (ABRS) for funding the present project and the Australian Institute of Marine Science, in particular John Benzie, for providing me with facilities and laboratory space. Thanks also to Hieronymus Dastych (Zoologisches Institut und Zoologisches Museum, Universität Hamburg), Mark Harvey (Western Australian Museum, Perth), Manfred Grasshoff and Ulrike Schreiber (Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt), Ben Brugge (Zoologisch Museum Amsterdam) and Gordon Nishida (Bishop Museum, Honolulu) for the loan of specimens, and Hiroshi Abé, Ilse Bartsch, Robert Raven and an anonymous referee for comments on the manuscript. Guillermo Díaz-Pulido, Peter

Doherty, Katharina Fabricius, Doug Fenner, Paula Tomkins, and Sven Uthicke contributed to the project by either collecting samples or allowing me to participate on their field trips. The Great Barrier Reef Marine Park Authority (GBRMPA) gave kindly permission to collect mites in the marine park. This publication is contribution 985 of the Australian Institute of Marine Science.

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